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ROTARY MILKING PLATFORM AND MEANS OF ROTATION

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(57) Claim

1. A rotary milking shed platform including a plurality of bales, said platform including: tracking means which is circular in plan and positioned underneath said platform, a first part of which is stationery and a second part of which rotates with said platform; a plurality of rollers positioned along said tracking means and uniformly spaced around the circumferential distance of the tracking means forming a continuous bearing means which rotates with said platform; spacing means to keep said rollers uniformly spaced along said tracking means; and driving means to rotate said second part of said tracking means and said platform.

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C O M P L E T E S P E C I F I C A T I O N

FOR A STANDARD PATENT

O R I G I N A L

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Invention Title: "ROTARY MILKING PLATFORM AND MEANS OF ROTATION"

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The following statement is a full description of this invention,
including the best method of performing it known to us:-

Title: ROTARY MILKING PLATFORM AND MEANS OF ROTATION

The present invention relates to improvements in rotary milking sheds, to the means of rotating the platform.

At present the bulk of milking sheds of the rotating style are constructed with
5 platforms of steel. This makes them expensive when compared with the same capacity
herring-bone milking shed. At present few rotary sheds have concrete platforms, which
would be a cheaper material in which to build, because of the difficulty experienced in
the past in finding a satisfactory construction technique. There are also a number of
difficulties with the present method of bearing in rotary sheds. In this arrangement it is
10 very difficult to replace worn parts.

An object of the invention is the provision of an improved means of rotating the
platform in a rotary milking shed which also overcomes or substantially ameliorates one
or more of the above described difficulties.

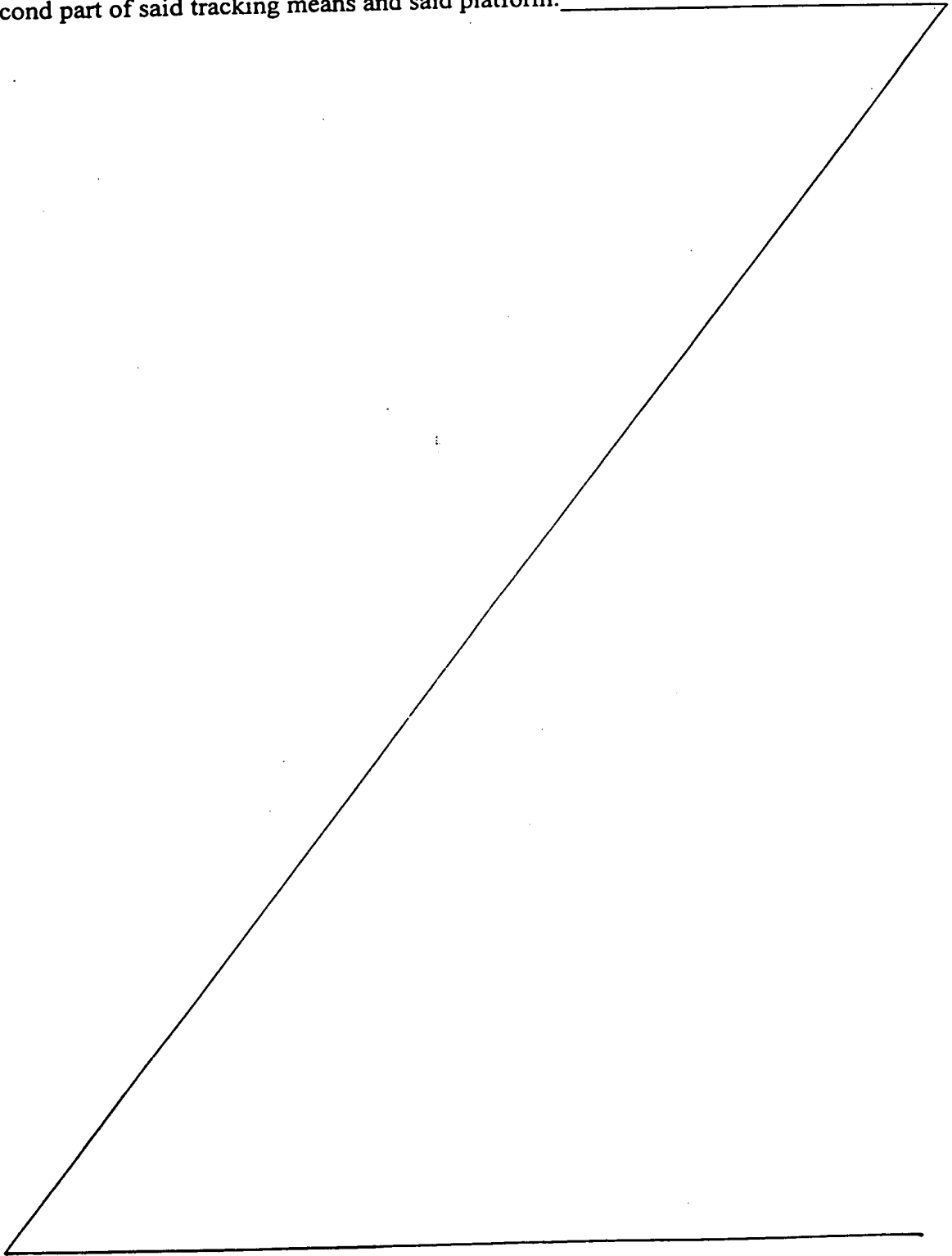
Throughout this specification the term "bail" is used in the sense of the unit into
15 which a cow is put for milking. Thus a 60 bail milking shed can milk 60 cows at the
same time.

The present invention provides a rotary milking shed platform including a plurality
of bales, said platform including: tracking means which is circular in plan and positioned
underneath said platform, a first part of which is stationery and a second part of which
20 rotates with said platform; a plurality of rollers positioned along said tracking means and
uniformly spaced around the circumferential distance of the tracking means forming a
continuous bearing means which rotates with said platform; spacing means to keep said



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rollers uniformly spaced along said tracking means; and driving means to rotate said second part of said tracking means and said platform.



Preferably, the number of said rollers (or bearings) is the same as the number of bails in the said shed and are appropriately spaced, one per bail. Preferably said rollers are made of nylon and which are acting as radius bearings as well as compression bearings.

5 Preferably said tracking means includes an upper guide means, said upper guide means being positioned underneath and secured to the underside of said platform; and a lower guide means which is secured to the foundation of said shed and positioned below said upper guide means.

 Preferably, said spacing means includes at least one curved rail, positioned
10 on the outside of said upper and lower guide means, to which the bearings are secured at the said uniform spacing.

 By way of example only, a preferred embodiment of the present invention will be described in detail, with reference to the accompanying drawings, in which:-

 Fig. 1 is a plan view of a preferred embodiment of a component of the
15 present invention;

 Fig. 2 is a section view a preferred embodiment of a component and of the rotary means of the present invention; and

 Fig. 3 is a section view of the preferred embodiment of the rotating means of the present invention.

20 Referring to Figures 1 and 2, a component 2 of a rotating platform 3 for a rotary milking shed is there shown. The component 2 is of a size to include one bail (as hereinbefore defined). The component 2 has an inner end 4, an outer end 5 and two sides 6,7. The inner and outer ends 4, 5 are arcs of circles with different radii. The sides 6,7 fall on two (imaginary) radial lines from the centre of the platform 3.
25 The angle between the two radial lines will depend on the capacity of the shed (i.e.



the number of bails) and the preferred width of each bail.

Reinforcing steel (not shown) is used in the casting of the component 2, in known manner. A metal sleeve 9 is placed in the casting before the concrete is poured to form the component 2. The position of the sleeve 9 is such that other
 5 support or separating brackets 10 can be secured to the platform 3 after the component 2 is removed from the mould.

The component 2 can be cast in an existing mould and moved into the desired position in a platform 3 (which can either be a new platform, or an existing one, in which the component 2 is forming a replacement part of the platform 3).
 10 Alternatively, if so desired, the component 2 can be cast in situ. One end of a polystyrene mould (not shown) can be positioned on the existing foundation 11. The second end of the mould, over the lower portion 12 of the existing foundation, is supported by a removable prop 13 whilst the component 2 is being constructed and during its curing.

15 If a completely new platform 3 is constructed from a plurality of components 2, the components 2 can be secured together with plates (not shown) on the underneath of said components 2. The supporting means for the platform 3 is as described below in the description of the means of rotating the platform 3.

20 If the component 2 is to replace part of an existing platform 3, the same method of securement can be used, and at the same time the component 2 can be secured to the existing means of support of the platform 2, in known manner. Given the means of casting, it is thus possible to replace parts of a steel platform with sold concrete components 2 of the same dimensions. It is also possible, if so desired, to make the new bail on the components 2 slightly smaller, thus increasing the number of bails on the platform 3, without needing to enlarge the dimensions of the platform



3.

Referring to Figures 2 and 3, a continuous bearing means 8 for a rotary platform 3 for a milking shed is there shown. The bearing means 8 includes: an upper guide means 14; a lower guide means 15; a base 16; a plurality of roller bearings or rollers 17; and power source (not shown) to rotate said platform.

The upper guide means or guide 14 is rectangular in cross-section. If the platform 3 is being constructed in situ, the upper guide 14 can be set into the casting at the time of casting the components 2. The lower guide means or guide 15 is also rectangular in cross-section.

The lower guide 15 is secured to a base 16 which in turn is secured to the foundation 11 of the milking shed. Such securement can be done by known means. If the milking shed is a new one being constructed then the lower guide 15 can be cast into the foundation 11 at the same time as the foundation 11 is being cast, without the need for the base 16.

The two guides 14, 15 are of metal, preferably steel, or any other suitable material on which the rollers 17 can run.

The rollers 17 can be of any material suitable for the purpose, but are preferably nylon bearings. The use of nylon rollers 17 means that the rollers 17 and the surfaces with which they come into contact do not need lubricating. The rollers 17 act as both radius bearings (or bearings) and compression bearings or rollers.

Each roller 17 has a central portion 17a which is circular in cross-section (taken at right angles to the axis of the roller 17). Circular flanges 17b are secured one on each side of the central portion 17a. The flanges 17b have a diameter greater than that of the central portion 17a, but less than the distance between the underside of the platform 2 and the top of the foundation 11. If so desired the

rollers 17 are formed integrally. The width of the central portion 17a is slightly greater than the width of the guides 14, 15.

Each roller 17 is secured, at each end and axially, to a circular spacer 18 and a metal strip 19. The securement is along the axis of each roller 17 by a locating pin (not shown) and two nuts 20. The pin is preferably of stainless steel, but may be made of any other appropriate metal. Each strip or flat 19 thus is circular in plan and the strips 19 are the means by which the rollers 17 are spatially separated.

The two strips 19 are kept rigid relative to one another (or evenly spaced, relative to one another by a plurality of bars 19a rigidly secured therebetween. One bar 19a is secured between the strips 19 in between adjacent rollers 17. The bar is of uniform cross-section (eg. flat metal plate) and secured such that the distance between the strips 19 is uniform around the circumference thereof.

The circular spacer or washer 18 is of nylon but may be made of any other suitable material.

The number of rollers 17 used depends largely on the number of bails of the milking shed, as the number of rollers 17 will be determined by the weight each roller 17 must bear, the size of the power source used and the anticipated commercial life of the roller 17. In practice it has been found that one roller 17 per bail (of 150 mm diameter) for a shed of a size between 16 to 60 bails will adequately carry a load of 800 kilograms.

The two guides 14, 15 are positioned with a radius (relative to the centre of the platform 3) that is approximately half way between the inner and outer radii defining the inner and outer ends 4, 5 of the component 2. This position is shown in dotted outline 22 (Fig. 1). If the level of the foundation 11 (or underfloor) is deep, compared to the level of the underside of the platform 3 (using ground level



as a basis for comparison), one or more steel I beams 23 can be secured to the top of the upper guide 14 and to the underside of the platform 3 (eg. by welding). The I beams 23 curve along the path of the guides 14, 15 and are circular in plan.

Thus, with I beams 23, if the bearing means 8 is to be fitted into an existing milking shed, it is easy to make adjustments for differing, pre-existing space limitations. Also, if desired, the existing power means in such a milking shed could be used with this preferred embodiment.

If so desired, a flexible skirt 24 (dotted outline, Fig. 2) may be secured to the foundation 11 or the underside of the platform 3 to provide a screen to prevent debris entering the guides 14, 15 and rollers 17. This skirt (or flange) 24 need not be waterproof. If the rollers 17 and spacers 18 are of nylon (and thus the system needs no lubrication) then the bearing means 8 will not be affected by the presence of water, or any other fluid.



THE CLAIMS DEFINING THE INVENTION ARE AS FOLLOWS:

1. A rotary milking shed platform including a plurality of bales, said platform including: tracking means which is circular in plan and positioned underneath said platform, a first part of which is stationery and a second part of which rotates with said platform; a plurality of rollers positioned along said tracking means and uniformly spaced around the circumferential distance of the tracking means forming a continuous bearing means which rotates with said platform; spacing means to keep said rollers uniformly spaced along said tracking means; and driving means to rotate said second part of said tracking means and said platform.
2. A rotary milking shed platform as claimed in claim 1, wherein the number of rollers is equal to the number of bails (as hereinbefore defined), said rollers being appropriately spaced at one per bail.
3. A rotary milking shed platform as claimed in claim 2 wherein said rollers are of nylon.
4. A rotary milking shed platform as claimed in any one of the preceding claims wherein said tracking means includes guide means including an upper guide means or guide positioned underneath said platform and secured thereto and a lower guide means or guide secured to the foundation of said shed and positioned below said upper guide means.
5. A rotary milking shed platform as claimed in claim 4 wherein said spacing means includes at least one curved rail positioned on the outside of said guide means, and to which said rollers are secured at a uniform spacing therearound.



6. A rotary milking shed platform as claimed in claim 5 wherein said spacing means includes two curved rails positioned one on the inside and one on the outside of said guide means; and a plurality of spacers which are secured between said two rails and evenly along the circumferences thereof.

5 7. A rotary milking shed platform as claimed in any one of claims 2-6 wherein each said roller has a central portion which is circular in cross-section (taken at right angles to the axis of the bearing).

8. A rotary milking shed platform substantially as herein described, with reference to the accompanying drawings.

10 DATED this 5th Day of June, 1996

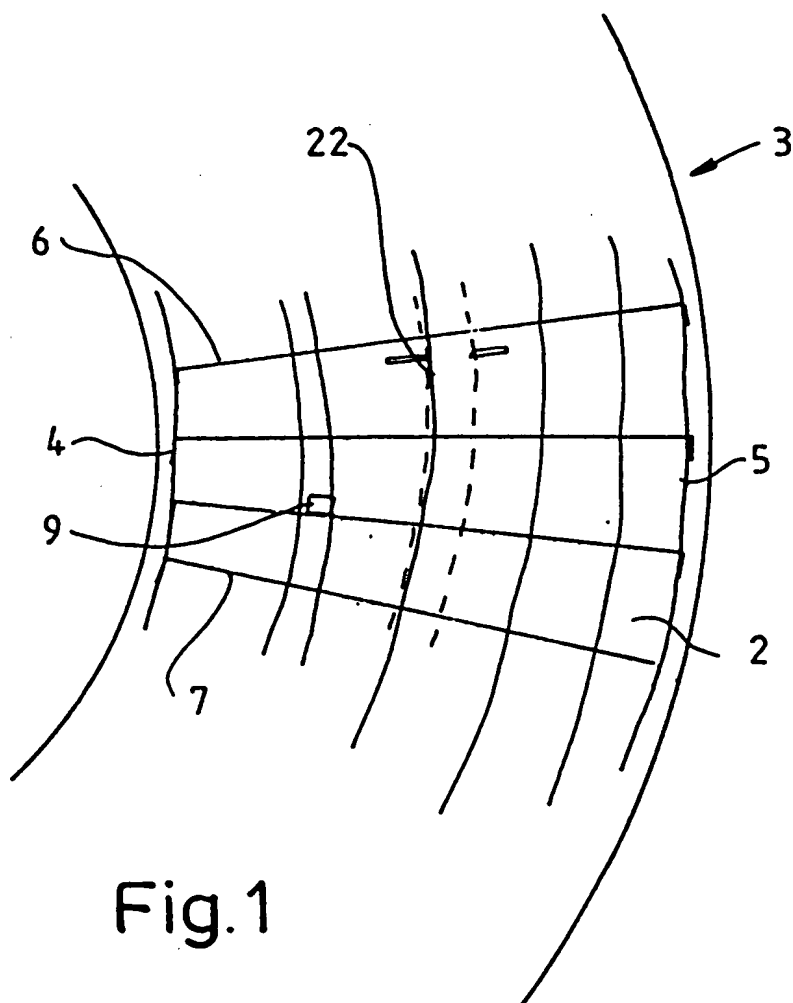
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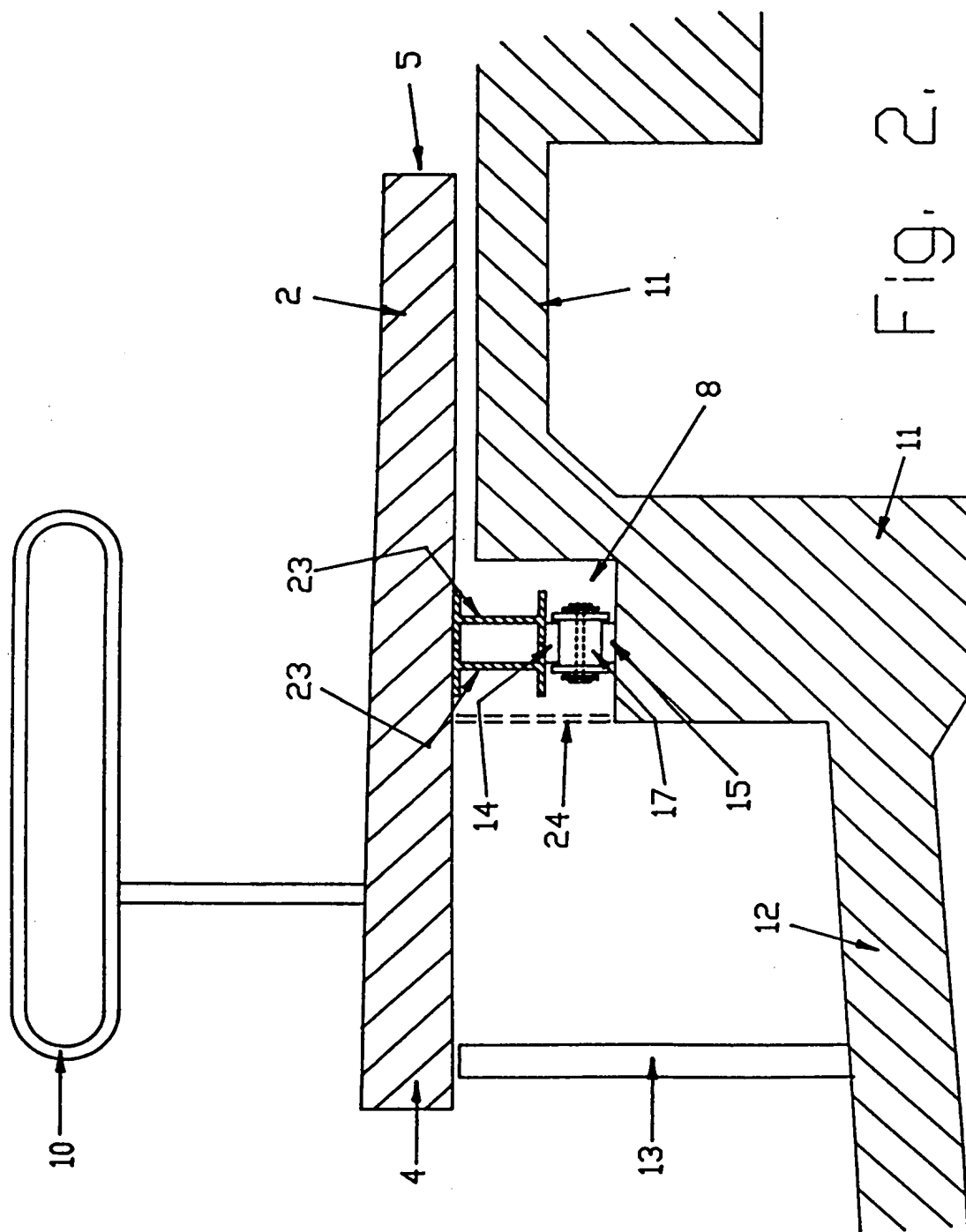
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ABSTRACT

The invention provides means (2) for rotating the platform (3) of a rotary milking shed which include a tracking means (15) which is circular in plan and positioned under the platform (3), a plurality of
5 bearings (17) positioned along the tracking means (15) and uniformly spaced around the tracking means (15) to form a continuous bearing means, spacing means (18) to keep the rollers (17) uniformly spaced on the tracking means (15) while in motion, driving means to rotate the
10 platform; wherein the tracking means (15) includes upper and lower guide means between the platform and the foundation of the shed; and wherein the platform (3) can be comprised of a plurality of component parts of reinforced concrete.





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